

ABSTRACT OF THE DISCLOSURE

The present invention provides a short resonator laser capable of high-speed operation with a low threshold value current and an element structure realizing a wavelength changeable laser having an excellent wavelength stability. A laser resonator waveguide is formed in such a manner that its lateral width is set to a wide value allowing lateral-multi mode at a part or the entire portion of the waveguide. This enables enhancement of a laser gain and reduction of electric resistance and thermal resistance while keeping the aforementioned characteristics of the short resonator laser. Here, by using self-focusing effect as a result of multi-mode interference effect, it is possible to reduce the mode conversion loss in the laser resonator and the light intensity distribution at the laser emitting end becomes a single-hill lowest order mode. Thus, it is possible to obtain a structure appropriate for connection with an optical fiber.